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NOTES OF A CASE OF CURE OF ANEURISM OF THE POSTERIOR TIBIAL ARTERY THROUGH POSITION AFTER FAILURE OF DIGITAL COMPRESSION.

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presented by the author.

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ORIGINAL ARTICLES.

NOTES OF A CASE OF CURE OF ANEURISM OF THE POSTERIOR TIBIAL ARTERY THROUGH POSITION AFTER FAILURE OF DIGITAL COMPRESSION.

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Cure by Compression.—The rarity of cases of aneurism of the arteries of the leg is probably to be explained by the fact that these vessels are placed, throughout the greater part of their course, between the deep and powerful muscles of the calf; which, while giving support to their walls, at the same time protect them from contact with surrounding osseous or tendinous structures. These circumstances probably counterbalance the effect of position or gravitation which would certainly on *à priori* grounds seem to favor the occurrence of

aneurismal dilatation of these arteries. Among the chief causes of their freedom from this form of disease are their protected position, rendering traumatisms rare, and the straight course which they take down the leg, there being no flexure in the vessels at any part of their course. That such bending or curving is frequently a predisposing cause of aneurism must probably be admitted, although, as has been shown by Mr. Barnwell, there must in addition be some local exciting condition. Otherwise it would be impossible to explain the much greater frequency with which aneurism occurs in the popliteal arteries as compared with the brachials at the bend of the elbow, both arteries being seated in the flexure of joints which are bent with about equal frequency. If it were simply its situation in the lower limb or the effect of gravitation which causes aneurism of the popliteal to be the most common form of all aneurisms and to be so frequently double, these conditions, which are found also in the tibial vessels, would make tibial aneurism much more common than it is. Above the knee, however, the vessel lies between the condyles of the femur and close against the upper and posterior edge of the tibia, against which, during violent exercise, and indeed more or less at all times, its anterior wall must be driven. This condition does not prevail at the bend of the elbow nor in the vessels below the knee. As to the general or systemic causes producing aneurism, atheroma, ossification, periarteritis, syphilis, alcoholism, rheumatism, etc., the tibials would certainly seem to be equally liable with all other parts of the vascular system to these diseases. Endoarteritis, the most important of all causes of aneurism, undoubtedly affects these vessels as it does others, but seems to fail in producing dilatation on account of the circumstances which I have mentioned, with possibly the additional reasons that they are so far from the heart, the impulse of which is therefore less forcibly transmitted to them; and that the main vessel just above them is divided into three branches of almost equal size, the current in any one of which is therefore considerably reduced in force.

However this may be, such aneurisms are certainly very frequent.

Mr. Barwell, in the *International Encyclopædia of Surgery*, refers to but one case of aneurism of the anterior tibial artery which he has found recorded in the last ten years, and during the same time but four cases of posterior tibial aneurism came under his notice.

Dr. Agnew, in his Treatise on Surgery, mentions but one case of spontaneous aneurism of the anterior and posterior tibial arteries as having been seen by him, and other writers agree as to the rarity of the disease.

Professor Kinloch reported in the *American Journal of Medical Sciences* for July, 1882, an interesting case of aneurism of the posterior tibial artery, arising without previous injury and attaining a large size. In this case ligation of the femoral was followed by the establishment of collateral circulation which renewed the supply of blood to the tumor, and, as a result of hemorrhage during the laying open of the sac one month afterward, amputation was necessitated. The patient recovered. Dr. Kinloch gives 22 cases of supposed spontaneous aneurism of the posterior tibial artery; although in many of the cases there was no perfectly clear history of traumatism, a careful review shows that in one instance there had been a fall twelve months previously, in another there was exertion

in pushing, in a third unusual muscular effort in pulling on a boot, in a fourth a kick had been received, and in others similar accidents or injuries were suspected, so that, as Dr. Kinloch says, the term spontaneous must be considered to imply that in the cases reported the proof of origin from traumatism is wanting. He says that perhaps in the strictest pathological sense there is never spontaneous aneurism of the posterior tibial.

Of thirty cases of posterior tibial aneurism which I have been able to collect the cause was not traceable in 14. In the remaining 16 there was a clear history of a blow, a kick, a wound, or of unusual and excessive muscular exertion. In all the cases the symptoms were those usually accompanying aneurismal swellings with the special symptoms due to the situation of the tumor, namely, œdema and swelling of the foot and ankle, and, in one case, gangrene of a considerable portion of the foot. It is noticeable that in at least one-third of the cases the reporter mentions the fact that there was no bruit to be discovered.

In twelve cases the femoral artery was ligated with six deaths, five cures, and one case of "partial cure." Seven cases, in which digital or instrumental compression was resorted to, were all cured.

In seven cases the artery was tied above and below the tumor, which was laid open. Three of these died, one after a consecutive amputation. Two are reported as completely cured. One was subsequently amputated and recovered. and in one case the result is not reported. The remaining cases are so imperfectly recorded that they cannot be used as a basis for generalization. It is evident, however, that the presumption is strongly in favor of the persistent use of compression, at least as a preliminary measure; that method, if carefully and skilfully applied, adding but little to the complications of the case, and being sometimes rewarded with success even after days of fruitless effort. The following case which I desire to place on record, contains some practical lessons which seem to me of interest and of importance :—

Mr. Vaughn, a farmer, aged 35 years, came under my care some time ago in the surgical wards of the University Hospital. He had been a life long sufferer from rheumatism. Several years previously he had an attack of aphasia with right sided hemiplegia ; from this he entirely recovered in the course of a year. Sixteen days before his admission into the hospital he had noticed a throbbing tumor in his right calf and remembered to having suffered great pain in the corresponding foot some days previous to this. He had a loud rough mitral systolic murmur ; his urine was normal ; his general appearance was excellent. On the back of the right leg, two inches below the centre of the popliteal space, there was a moderately firm, pulsating tumor, the size of a small orange, situated beneath the gastrocnemius and soleus muscles. There was aneurismal thrill and bruit. His right foot was swollen and tender, and the ankle was œdematous.

In consultation with Dr. Agnew it was decided to attempt a cure by digital compression ; but I was compelled to wait some days for a sufficient force of assistants. During that time I had the limb elevated and flexed at the knee, a shot-bag placed over the femoral artery, and ten grains of iodide of potassium given to the patient three times daily.

From this treatment there resulted a slight improvement. October 4th, at 10 P. M., digital compression was begun over the femoral artery at the apex of

Scarpa's triangle. At the same time aneurism was held gently by an assistant that he might warn the compressor when loss of control over the artery allowed pulsation. This method of procedure was followed throughout the entire course of the compression. To prevent abrasion of the skin, powdered zinc oxide was dusted over the surface of the thigh and also upon the thumbs of the assistants, and pressure was at times applied over the artery near its exit from the pelvis and in the popliteal space.

October 6th, evening. Tumor perceptibly firmer and pulsation less marked. Pulse 96, strong and full. Tr. aconite Rad. gtt., one every hour was ordered.

October 7th, evening. Pulse softer and more compressible. No pulsation apparent in aneurism when pressure is removed. Patient exhibited first signs of suffering, refused food, and had two blood-stained stools. Aconite stopped. Gr. ⅓. morph. sulph. given hypodermically. Pressure continued.

October 8th, morning. Pulsation, but tumor much more firm. Patient had some sleep during night, but could take no food and was much worn. Foot very painful. Evening, very slight pulsation and faint bruit. At 10 P. M., digital compression, having been kept up 96 hours, was stopped. There was still pulsation and bruit. A thick compress was then placed in the popliteal space, on this the knee was forcibly flexed, the leg was bandaged in this position, and was wrapped in cotton. In addition two horseshoe tourniquets were applied so that one controlled the artery at about the middle of Scarpa's triangle, the other as it passed through Hunter's canal. These were screwed down alternately every two hours. At 10 P.M. ⅓ gr. morphia was given hypodermically, followed in an hour by ¼ grain.

October 9th, 12 M. The patient had passed a fairly comfortable night, and was feeling much better than on the day preceding, though still suffering from a burning pain in the foot. The tourniquet was removed, and the bandage holding the leg forcibly flexed was loosened till the patient felt comfortable. No thrill or bruit could be detected in the tumor.

October 10th. The limb, still flexed and with the popliteal compress in position, was placed on an inclined plane. In two days the compress was removed, the leg straightened and a firm bandage applied, beginning at the toes and ending in a spica of the groin. From this time the tumor grew steadily smaller and firmer, and in two weeks the patient was allowed to rise from his bed. He continued to make himself useful in the ward till the date of his discharge, October 17th, when the tumor had shrunk to about half its original size.